Department of Pesticide Regulation

Paul Helliker
Director

Gray Davis
Governor

Winston H. Hickox
Secretary, California Environmental Protection Agency

M E M O R A N D U M

TO: Joe Frank **HSM-02032**
Senior Toxicologist
Worker Health and Safety

FROM: Sheryl Beauvais [original signed by S. Beauvais]
Staff Toxicologist (Specialist)
445-4268

DATE: September 6, 2002

SUBJECT: ENDOSULFAN EXPOSURE ESTIMATES IN DRAFT EXPOSURE ASSESSMENT DOCUMENT (11-2-2001) AND REREGISTRATION ELIGIBILITY DECISION (7-31-2002)

Currently, the draft endosulfan Exposure Assessment Document (EAD; Beauvais *et al*., 2001) is in review in Med Tox. Earlier drafts were prepared by Jim Sanborn. In the most recent draft, handler estimates derived from PHED were done according to the WHS policy of the time (Powell, 2001). Because of changes in WHS policy within the last year, different estimates would result if the exposure assessment were prepared now. Not only would PHED estimates be adjusted with different factors (i.e., multipliers given in Powell (2001) differ from those presently used), but WHS now has standardized criteria for generating PHED subsets. Additionally, PPE specified on products labels was considered in exposure estimates for M/L, for aerial applicators and for airblast applicators, but not for groundboom applicators or high pressure handwand M/L/A.

Ranges of exposure estimates reported in an occupational exposure assessment prepared by USEPA (2001) were listed in the EAD. In general, estimates in the EAD were within the range of those in USEPA (2001). Some estimates in the Reregistration Eligibility Decision (RED) released by USEPA last month (USEPA, 2002), were lower than those in USEPA (2001), based on division of NOELs by MOEs. However, review of exposure estimates in the RED shows that those reported in the EAD are still fairly similar. If NOELs used in preparation of MOEs for DPR's RCD are similar to those used by USEPA, then mitigation measures proposed by USEPA (2002) would be expected to address any unacceptable MOEs in the RCD. Mitigation measures proposed in the RED that might reduce exposure estimates include required packaging of wettable powders in water soluble bags, cancellation of wettable powder uses on some crops and aerial application of wettable powders on many other crops, decreased maximum application rates, requirement for closed cab in several aerial and all airblast applications, and extended restricted entry intervals.

In the RED, several scenarios were considered in addition to those included in the EAD. These involved application (and M/L) via chemigation, Right-of-Way spraying, and plant and root dipping; as well as M/L/A via low pressure handwand and backpack. Reentry scenarios in the EAD were broadly defined, and covered the significant reentry scenarios. All the handler

scenarios omitted from the EAD but included in the RED had acceptable MOEs in the RED. However, because USEPA differs in some assumptions and procedures in preparing exposure estimates, we may choose to estimate exposures for some or all of these scenarios. These scenarios should be examined once the RCD is completed, to confirm that they do not result in unacceptable exposures.

Conclusions:

1. Review of the RED for endosulfan has revealed some scenarios that were not addressed in the EAD. These scenarios all had acceptable MOEs (USEPA, 2002), suggesting that there is not a need to consider them in the EAD. However, once the RCD is complete, these scenarios should be examined to confirm that they do not result in unacceptable exposures.

2. Mitigation measures proposed in the RED would affect exposure estimates, and may be sufficient to mitigate any unacceptable MOEs calculated in the RCD. The status of these mitigation measures should be checked when the RCD is completed.

3. Exposure estimates in the EAD are generally in range with those reported in the RED. Exposure estimates in the EAD were calculated based on policies in place at the time the EAD was prepared, and do not require changing at this time. However, once the RCD is complete, exposure estimates for any scenarios having unacceptable MOEs might be verified.

References:

Beauvais, S., Sanborn, J. and Powell, S. (2001). Human Exposure Assessment for Endosulfan. Report no. HS-1647. Draft dated November 2. Sacramento, CA: Worker Health and Safety Branch, Department of Pesticide Regulation, California Environmental Protection Agency.

Powell, S. (2001). Approximating the 95th percentile and 90% confidence limit for data from the Pesticide Handlers Exposure Database (PHED V1.1). HSM-01010. Sacramento, CA: Worker Health and Safety Branch, Department of Pesticide Regulation, California Environmental Protection Agency.

US EPA. (2001). Occupational and Residential Exposure and Risk Assessment and Recommendations for the Reregistration Eligibility Decision Document for Endosulfan. Second Revision, dated January 2. Washington, DC: Health Effects Division, U.S. Environmental Protection Agency.

US EPA. (2002). Reregistration Eligibility Decision for Endosulfan. Case No. 0014. Washington, DC: Health Effects Division, U.S. Environmental Protection Agency.